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Recent findings as regards T2 and HT-2 toxin in cereals

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"Agricultural Contaminants – Fusarium Forum“

Brussels, February 9-10, 2009

COMMISSION REGULATION (EC) No 856/2005

of 6 June 2005

amending Regulation (EC) No 466/2001 as regards *Fusarium* toxins

...ance)

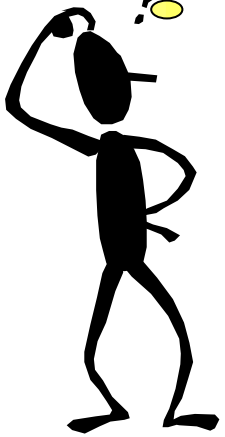
COMMISSION REGULATION (EC) No 1881/2006

of 19 December 2006

setting maximum levels for certain contaminants in foodstuffs

(Text with EEA relevance)

ML for T-2 / HT-2 ?



The SCF considered that the available data did not support the establishing of group Tolerable Daily Intake (TDI) for the evaluated trichothecenes and established

— a TDI of 1 µg/kg body weight/day for deoxynivalenol (DON),

— a temporary TDI (t-TDI) of 0,7 µg/kg body weight/day for nivalenol,

— a combined temporary TDI of 0,06 µg/kg body weight/day for T-2 and HT-2 toxin.

Research project T-2 and HT in food crops

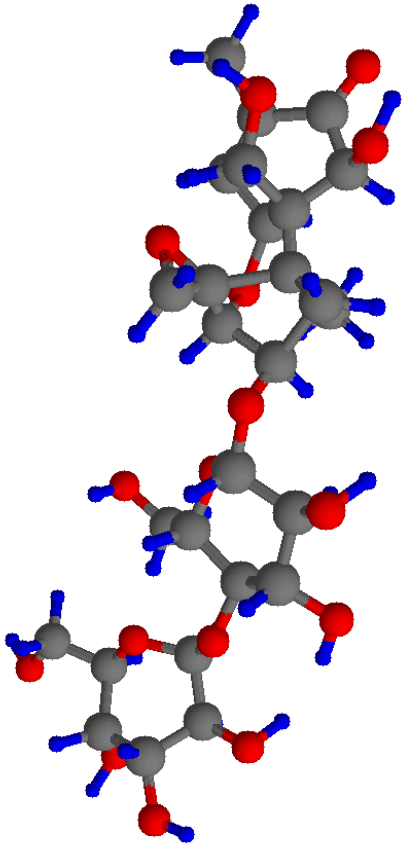
in collaboration with Agricultural Research Institute Kromeriz, CZ

- **Localities:**

Žabčice, Kroměříž

- **Barley varieties:**

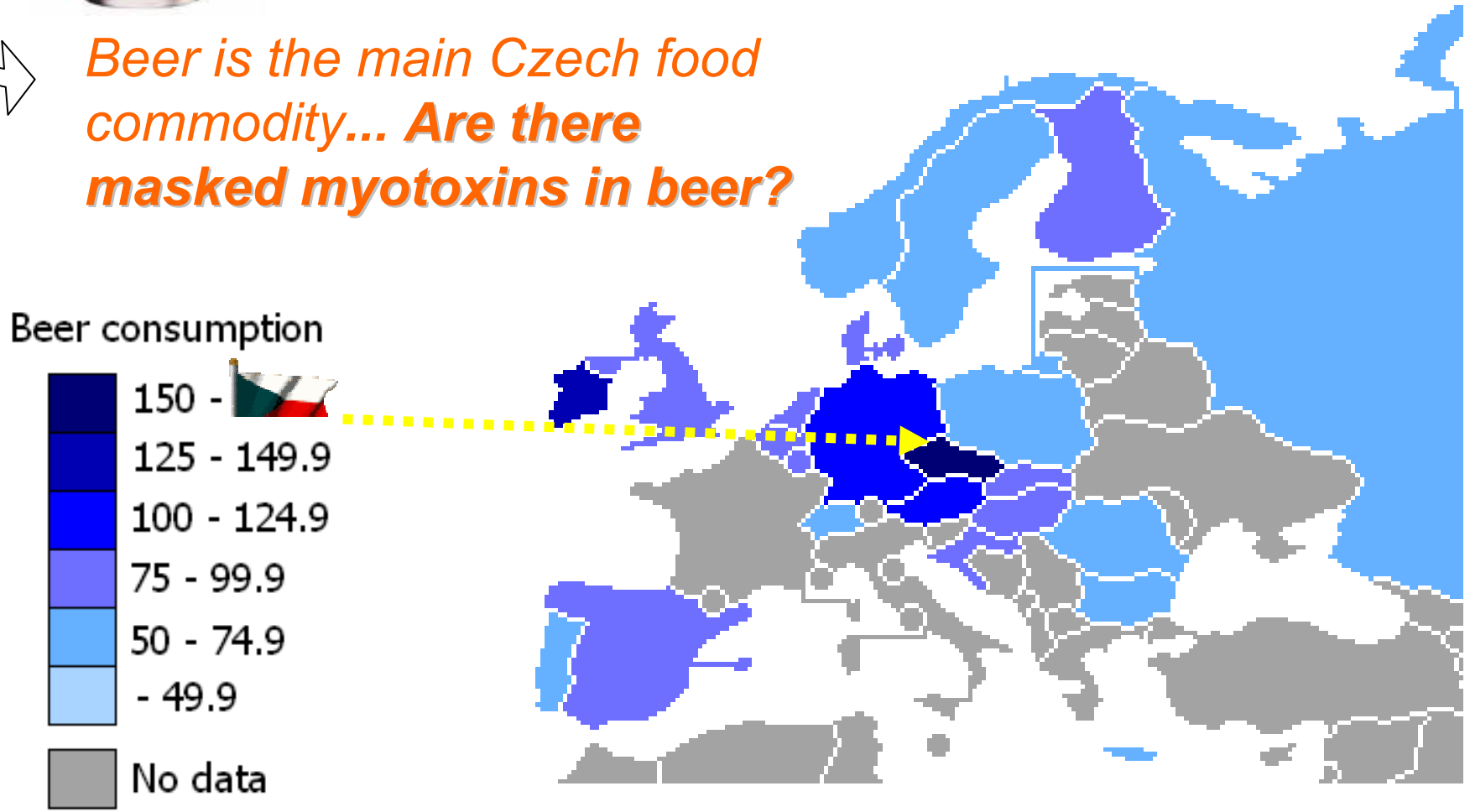
Amulet,
Bojos,
Jersey,
Malz,
Prestige,
Sebastian,
Tolar,
Merlin,
KM 1057,
KM 1910,
KM 2084,
KM 2283



Are there also trichothecenes A in beer ?

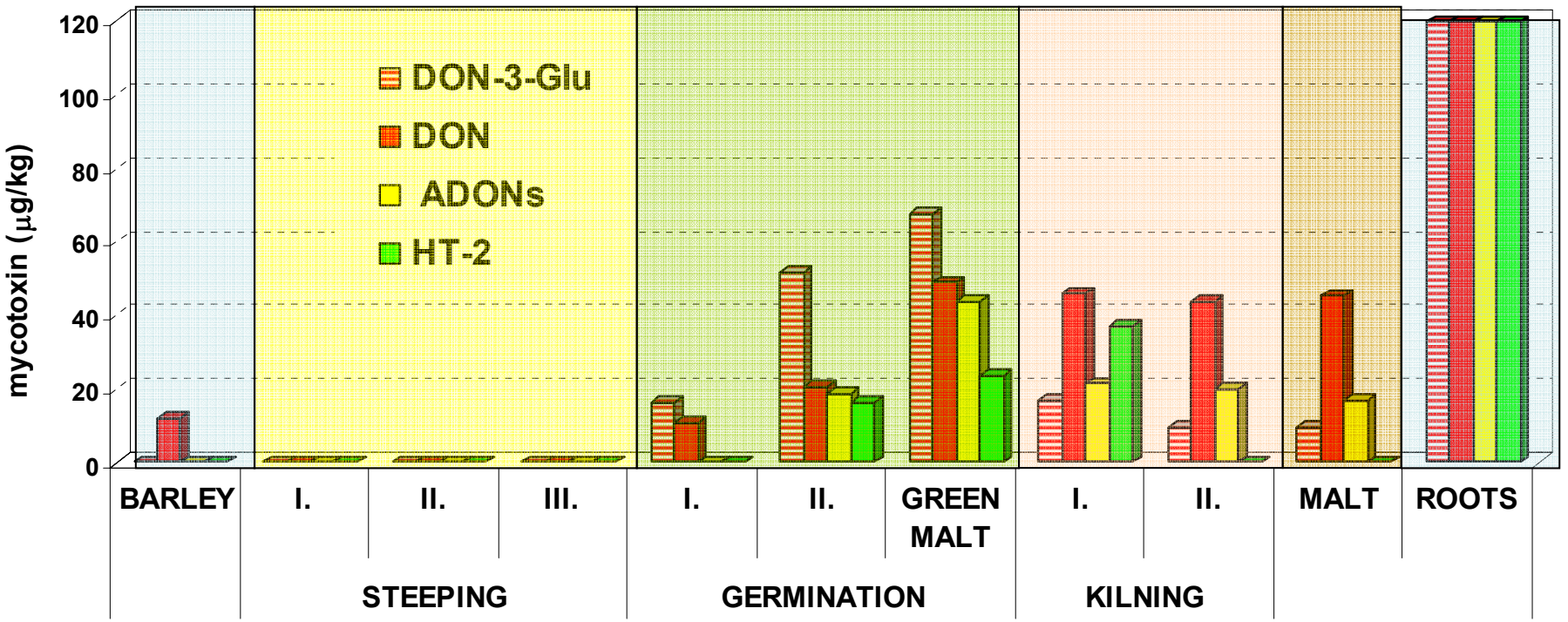
……DON is frequently found in commercial beers, originating from malt or from grain adjuncts

Beer is the main Czech food commodity… ***Are there masked myotoxins in beer?***

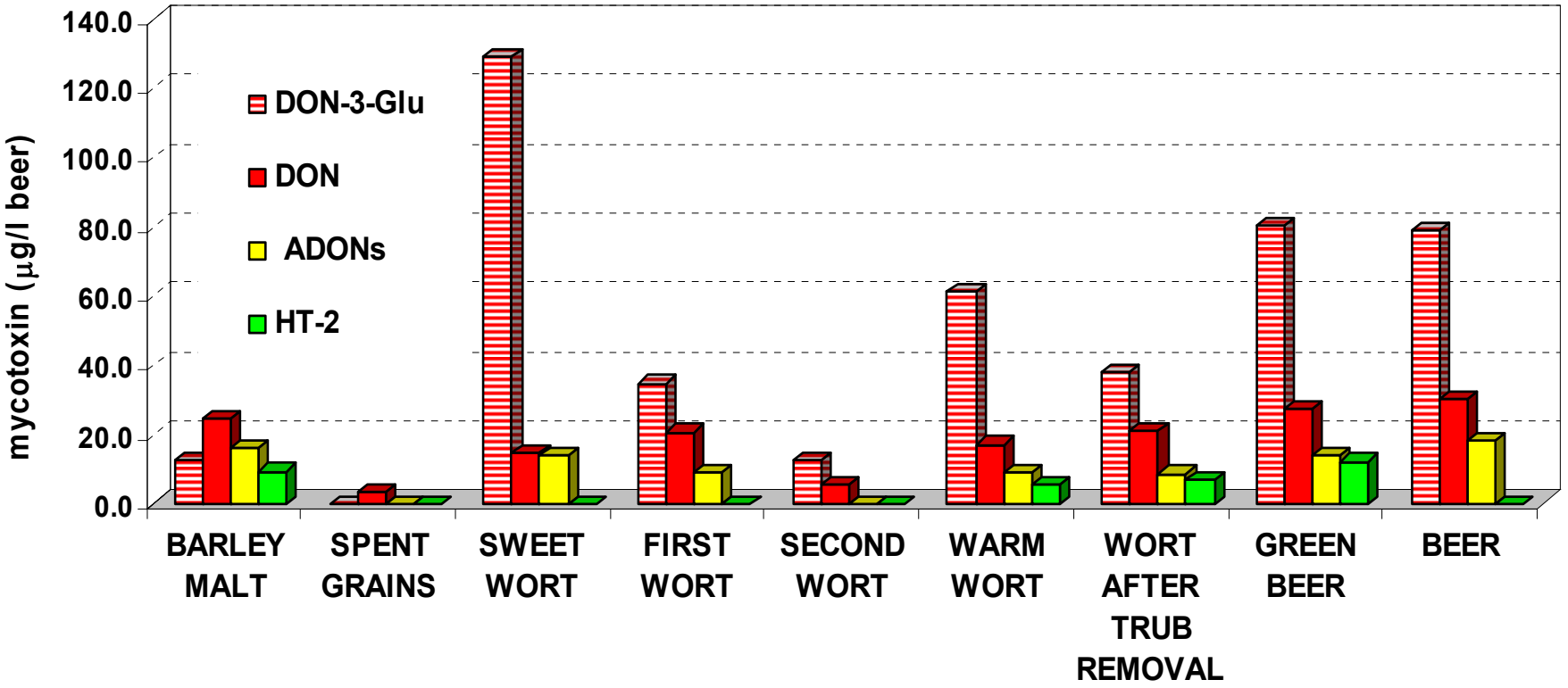


FATE OF *FUSARIUM* MYCOTOXINS DURING MALTING PROCESS

DON-3-GLU = 460 µg/kg
DON = 553 µg/kg
ADONs = 571 µg/kg
HT-2 = 1061 µg/kg

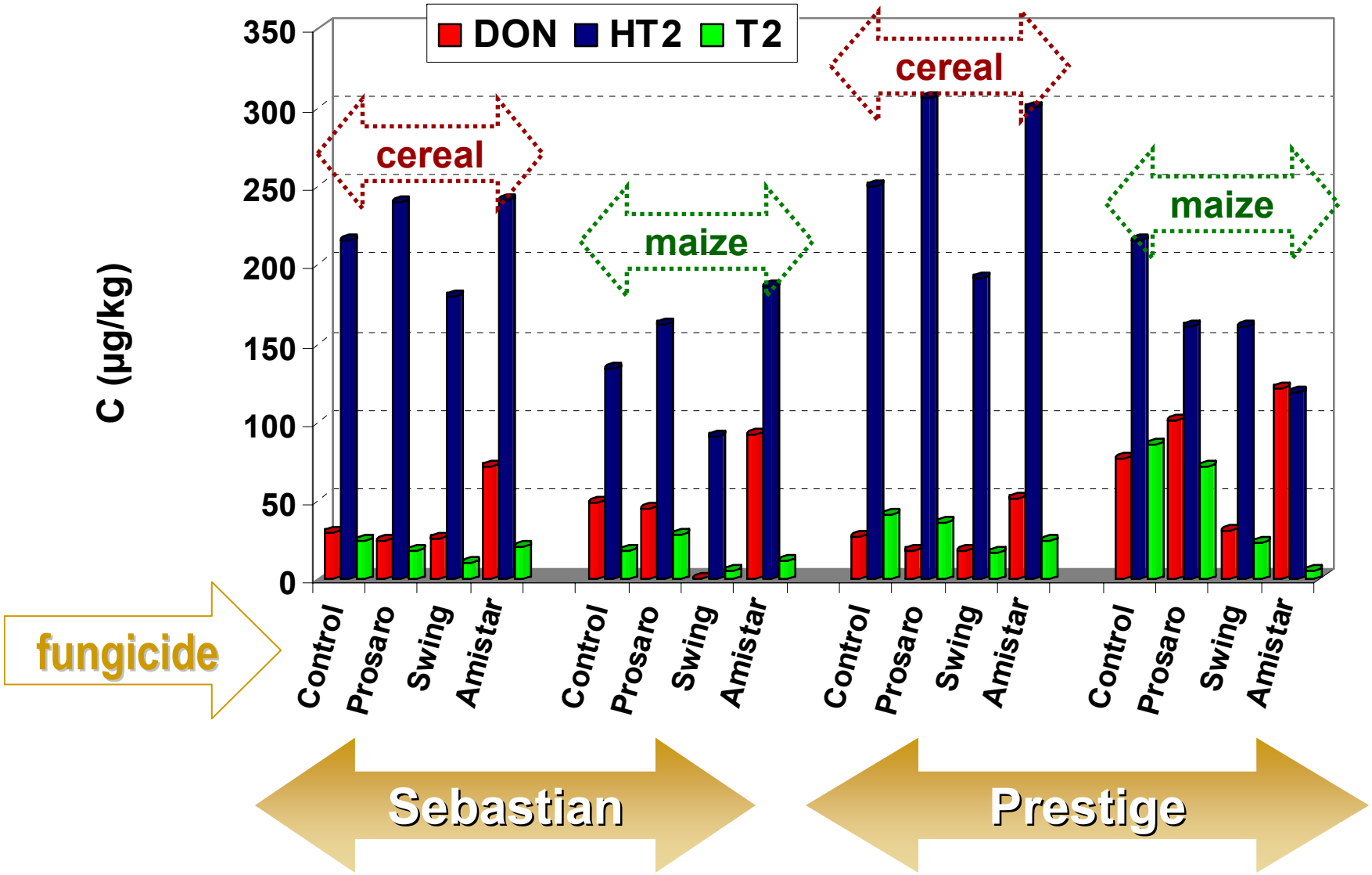


FATE OF *FUSARIUM* MYCOTOXINS DURING BREWING PROCESS

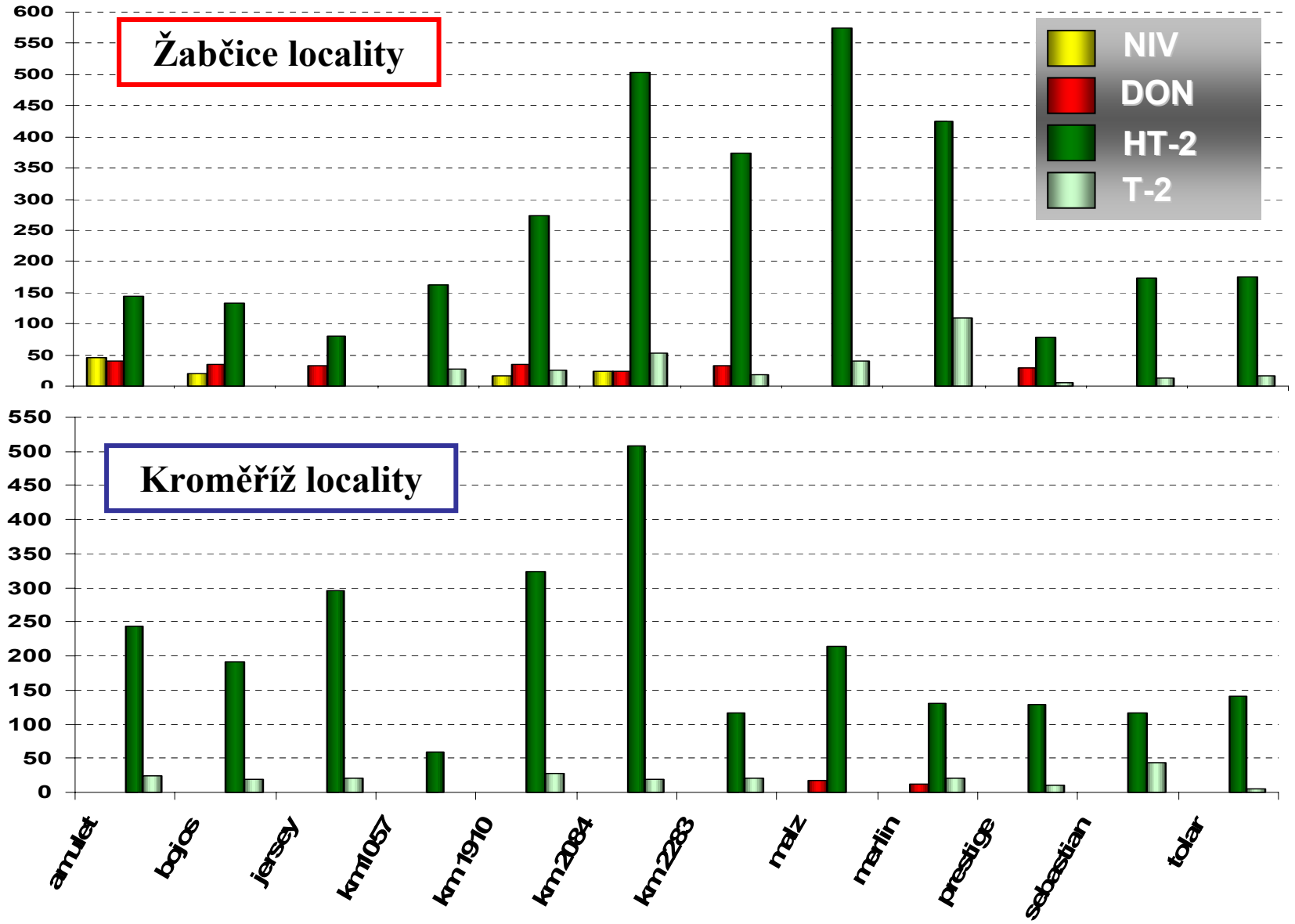


Type A and B trichothecenes in barley, harvest 2008, locality Kroměříž

- pre-crop influence
- variety influence
- fungicide influence

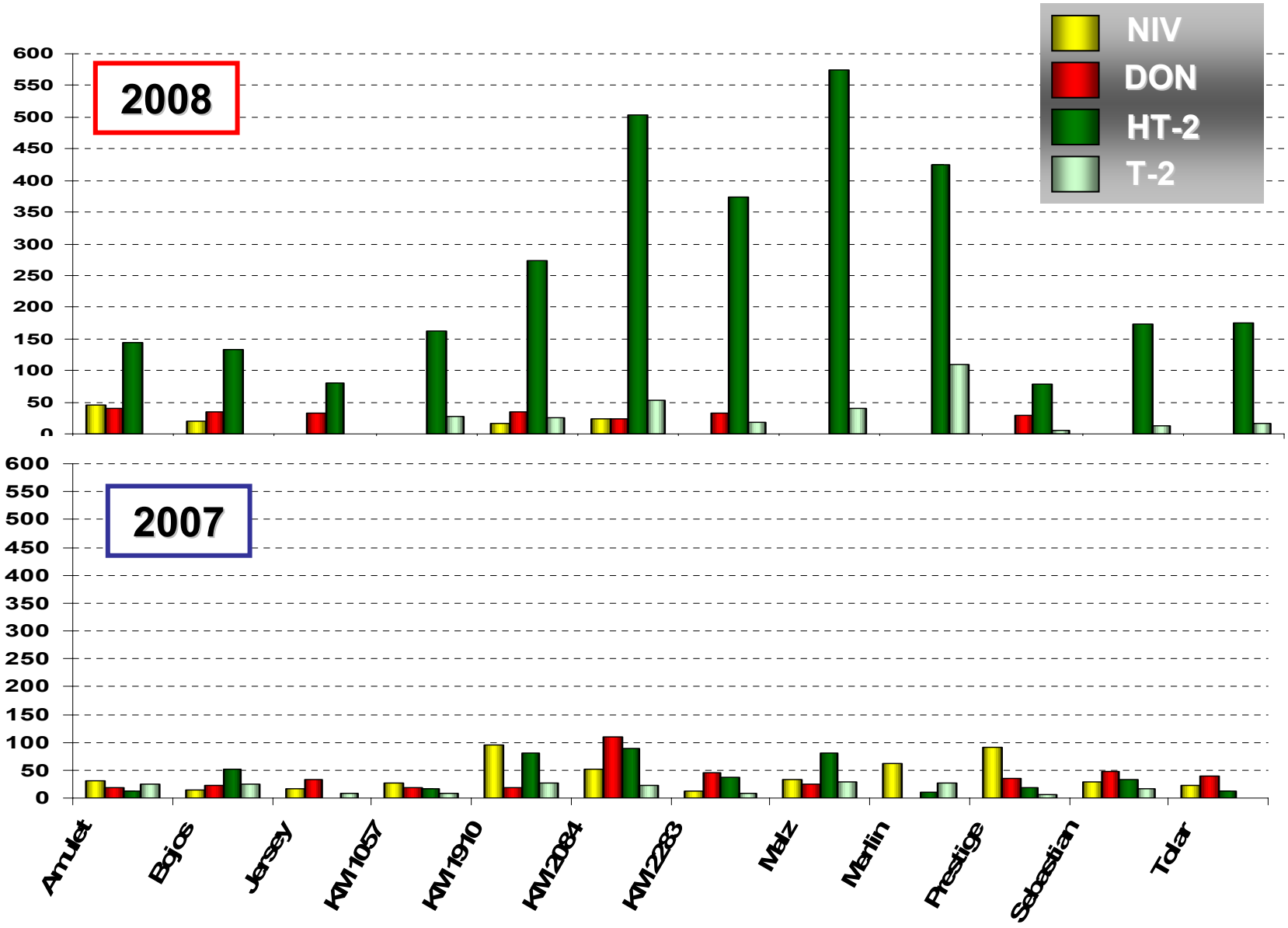


Fusarium mycotoxins in spring barley, 2008



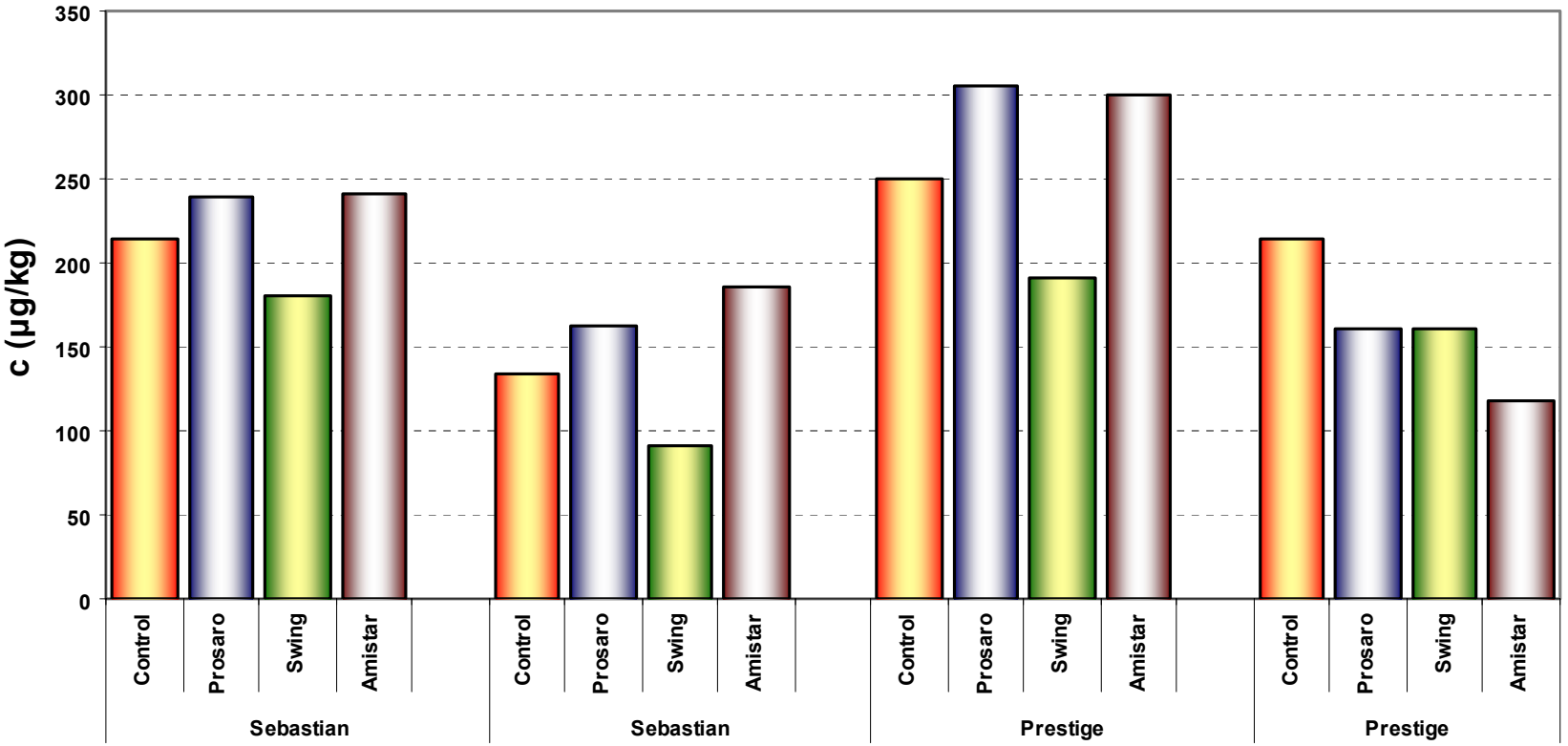
Fusarium toxins in spring barley, 2008 vs 2007

locality Zabcice



HT-2 contamination in barley

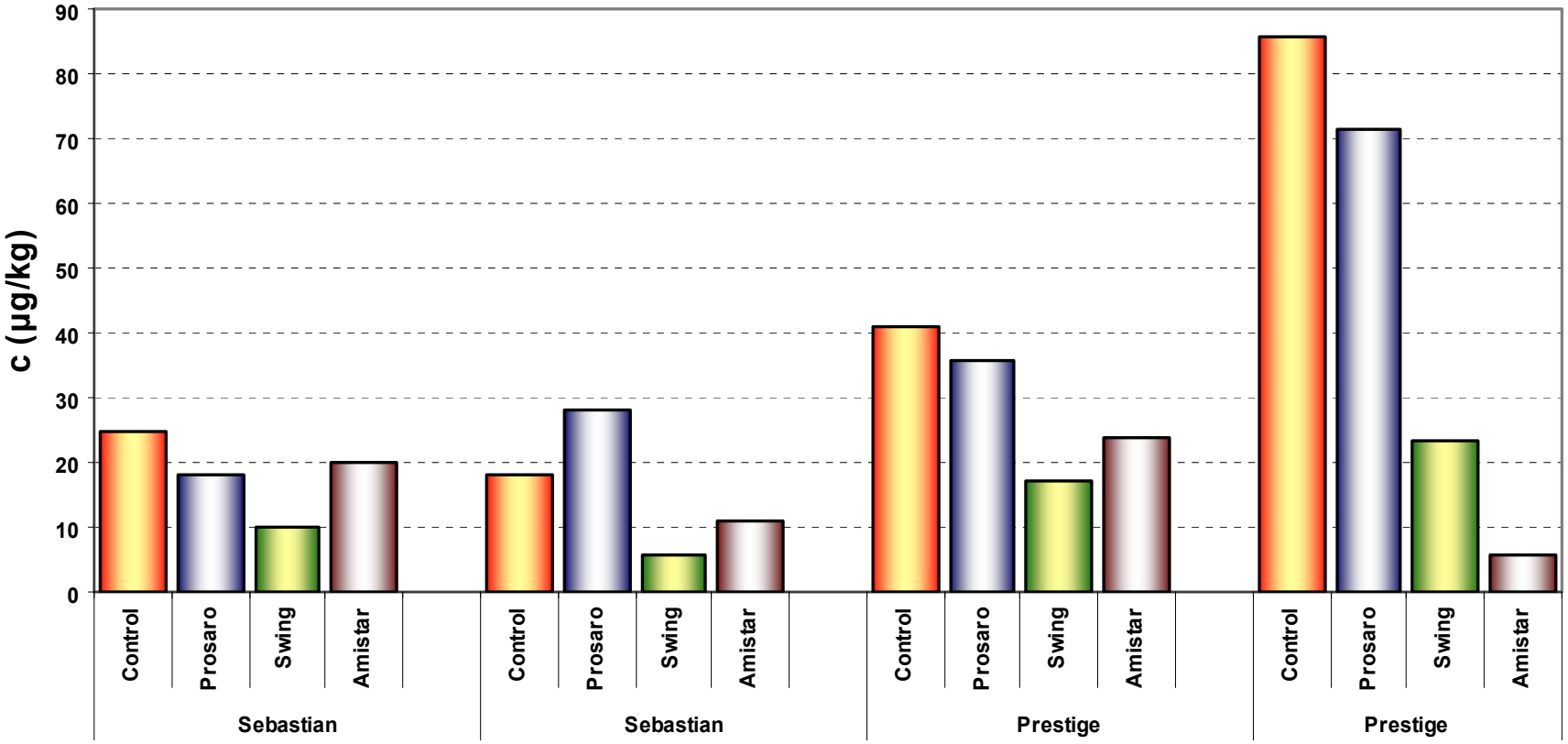
pre-crop influence / variety influence / fungicide influence



maize **cereal**

T-2 contamination in barley

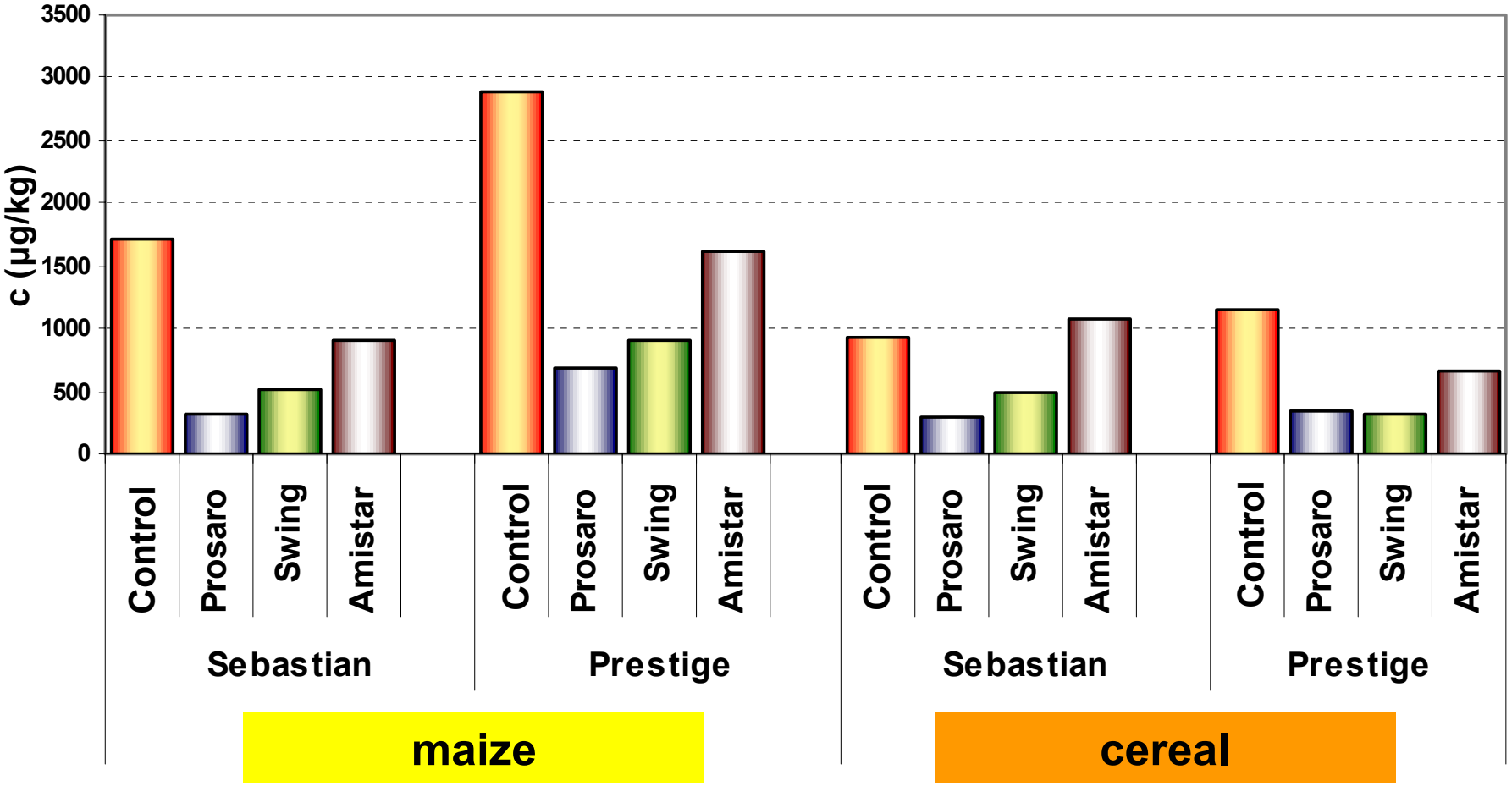
pre-crop influence / variety influence / fungicide influence



maize **cereal**

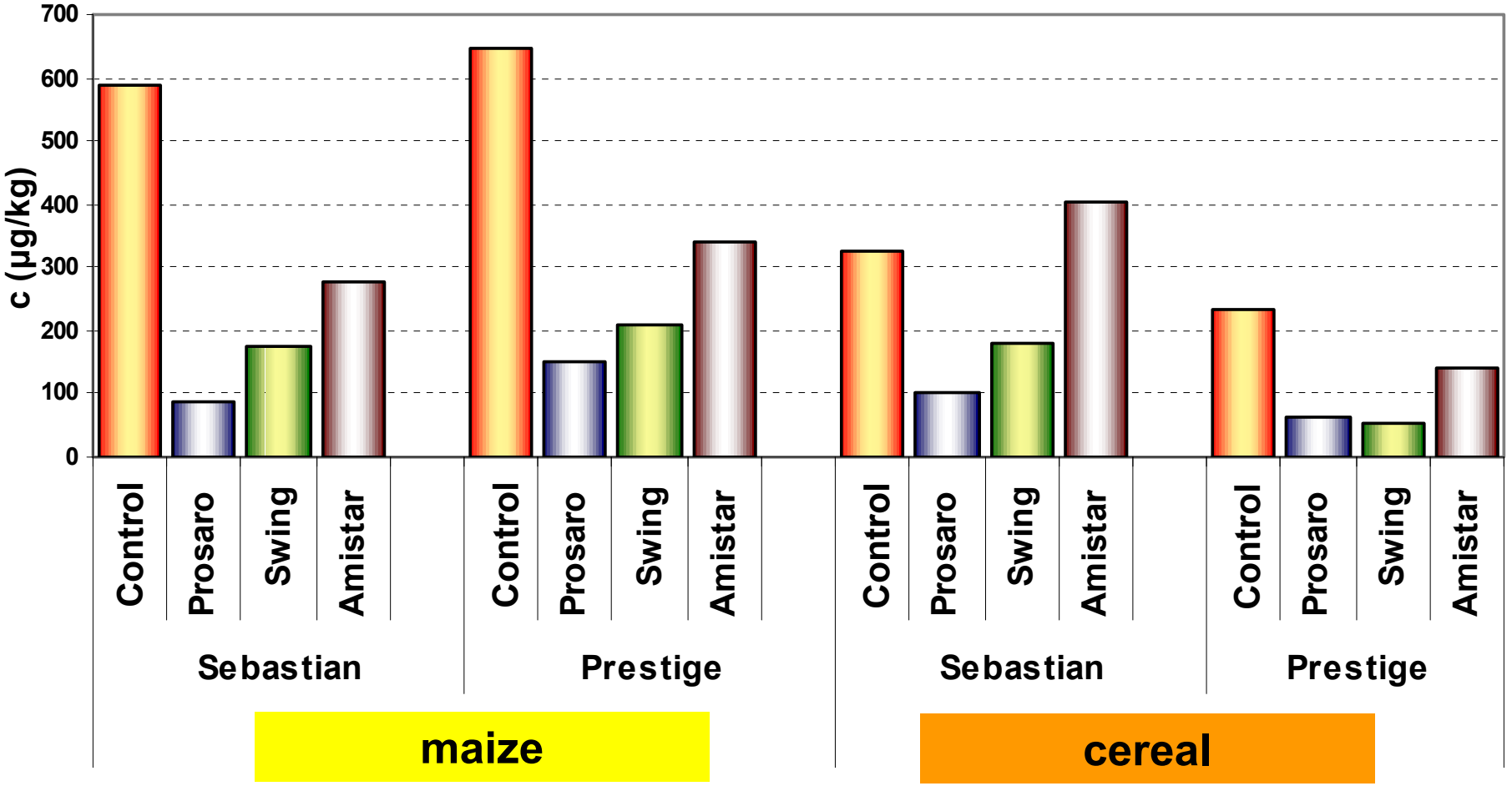
DON contamination in barley

- pre-crop influence
- variety influence
- fungicide influence



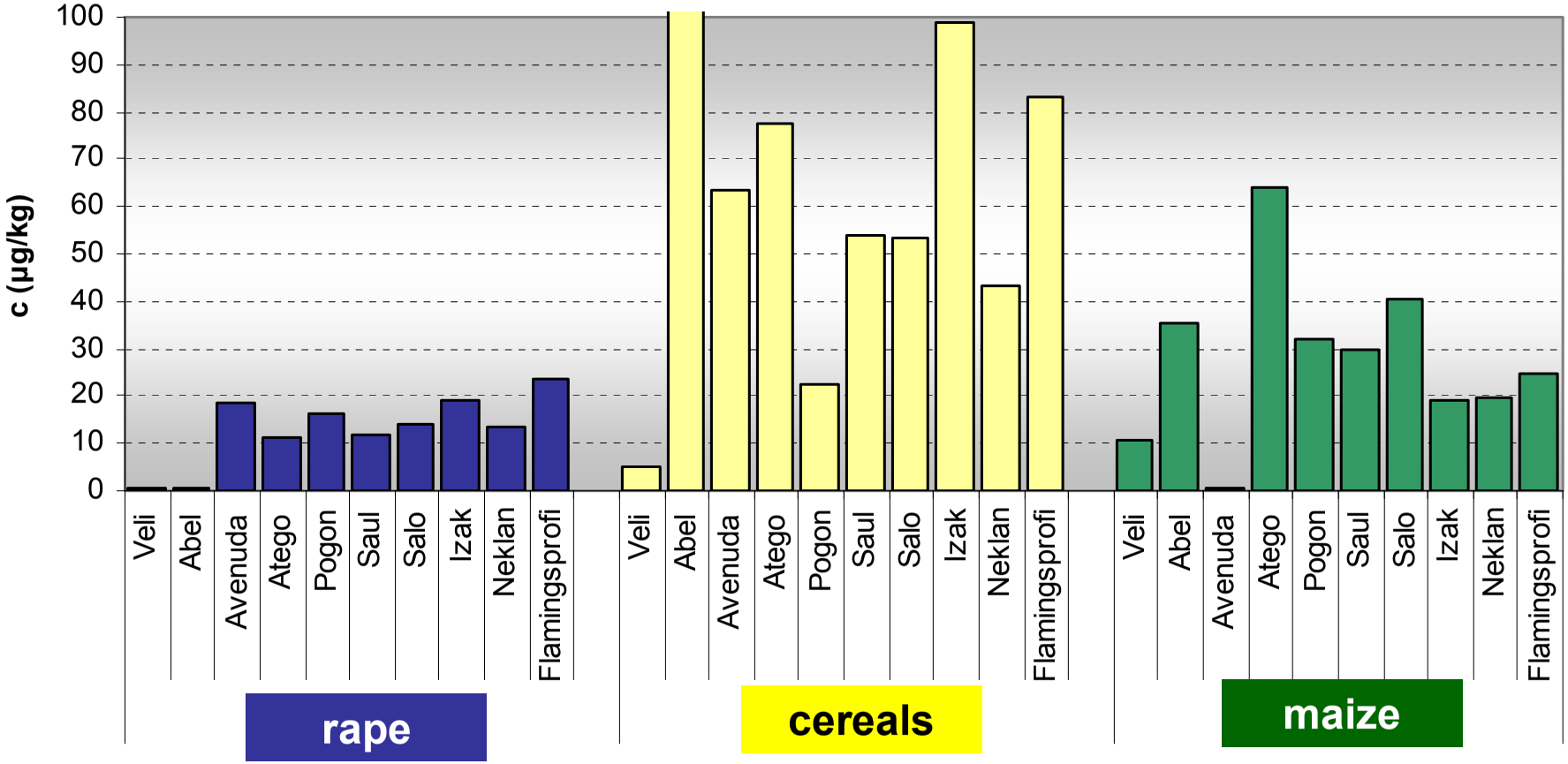
DON-3-Glc contamination in barley

- pre-crop influence
- variety influence
- fungicide influence



HT-2 toxin in oat (2008)

- pre-crop influence
- several varieties



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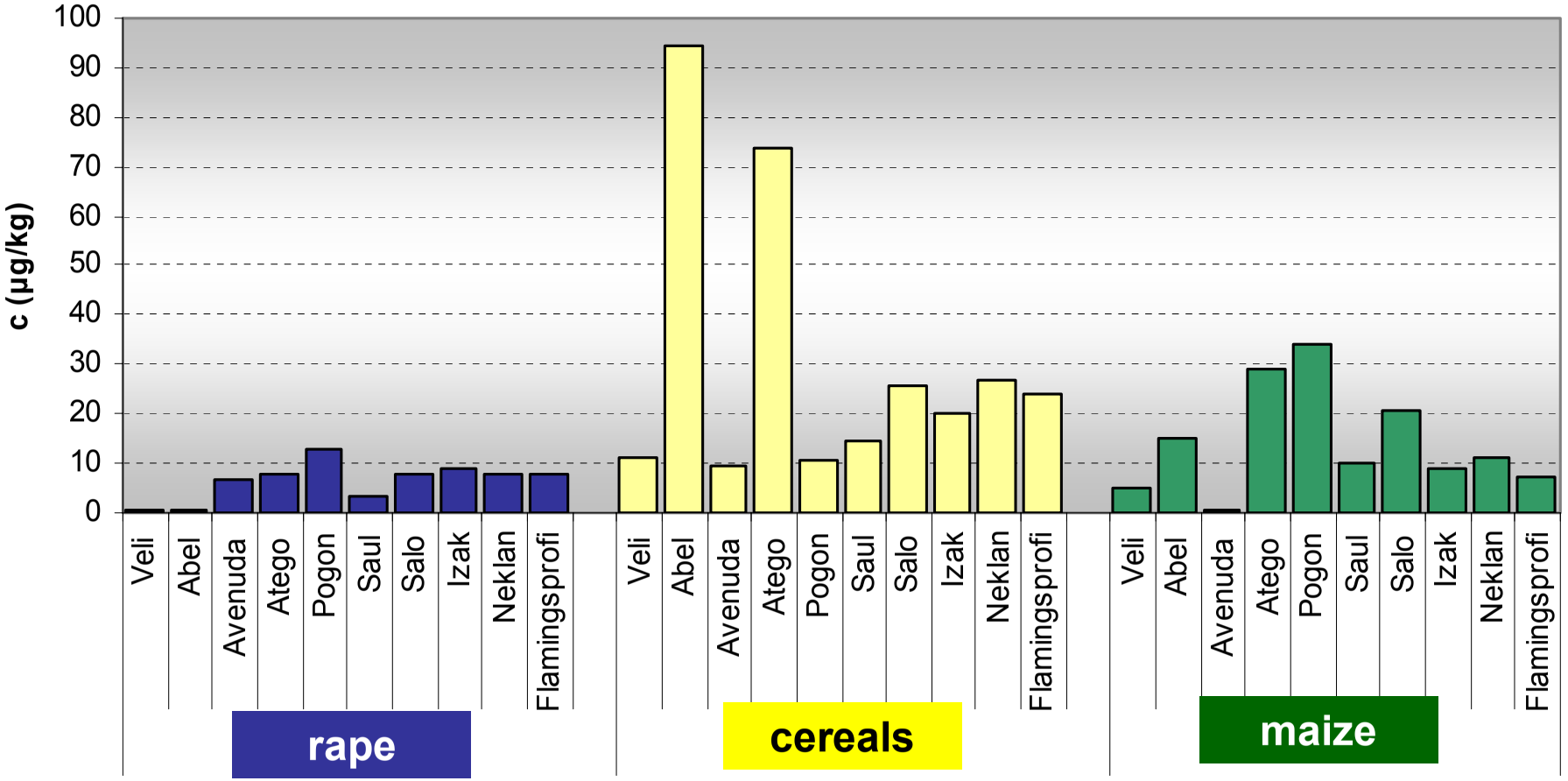

DON in oat (2008)

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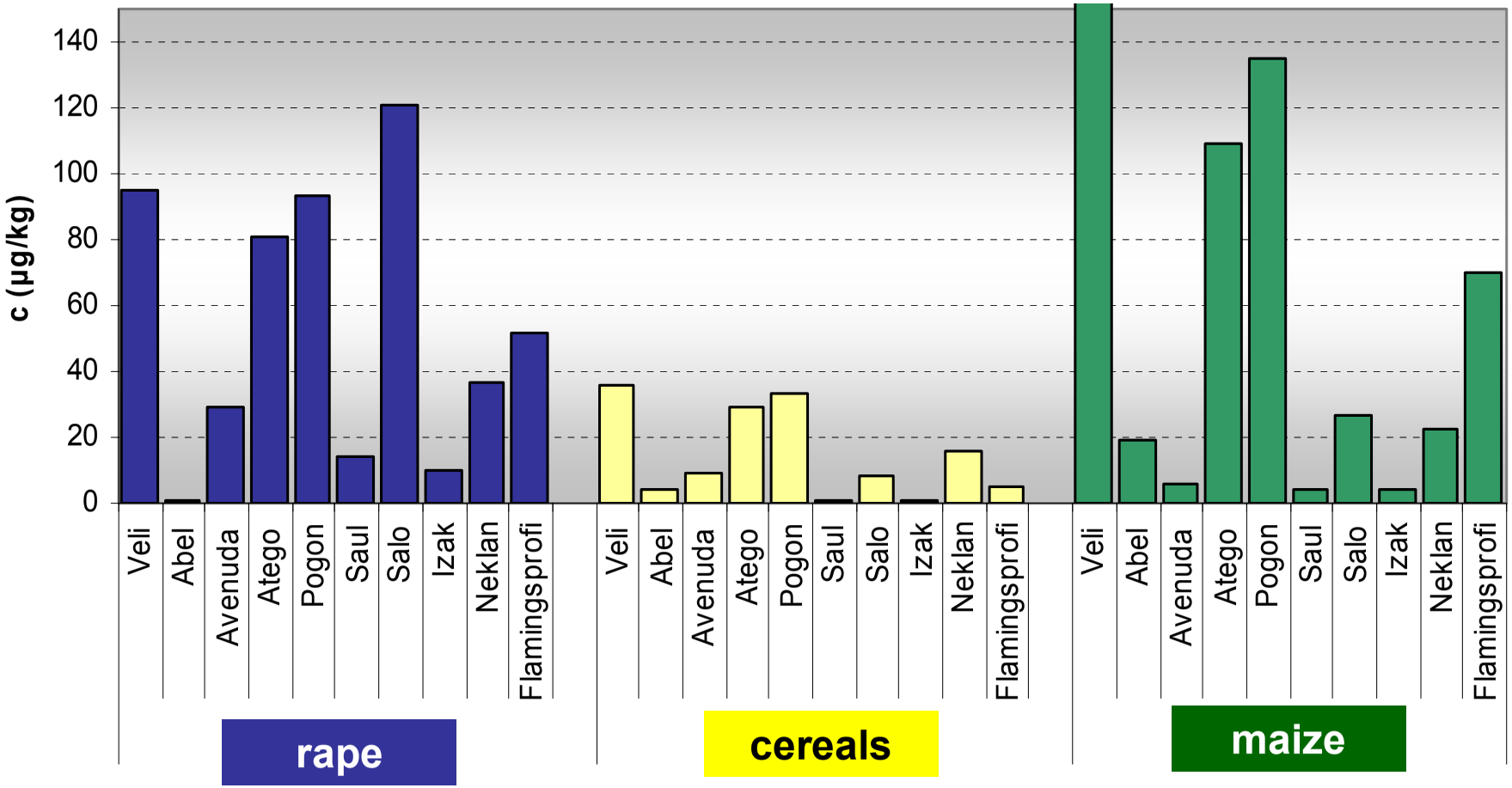
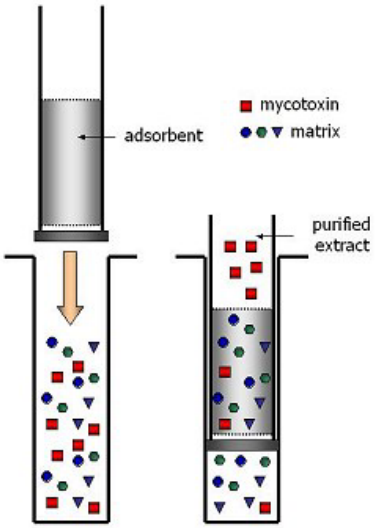


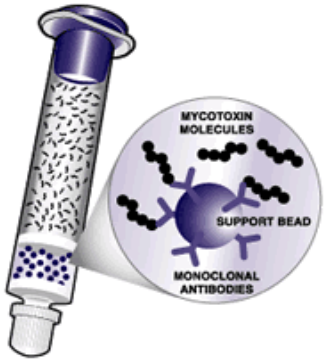
Analytical methods for determination of HT-2 and T-2 toxins in cereals: clean-up of samples

SPE columns

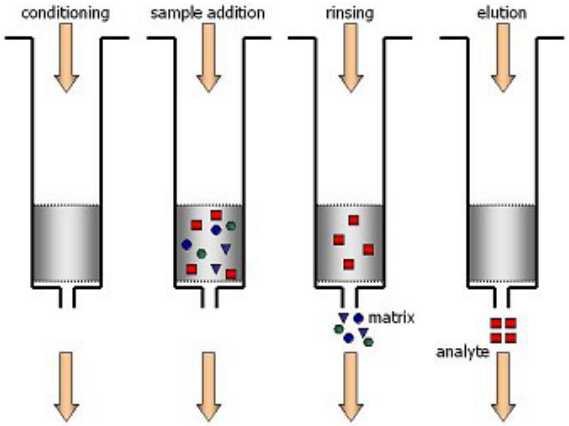


ROMER
Romer Labs®

MycoSep



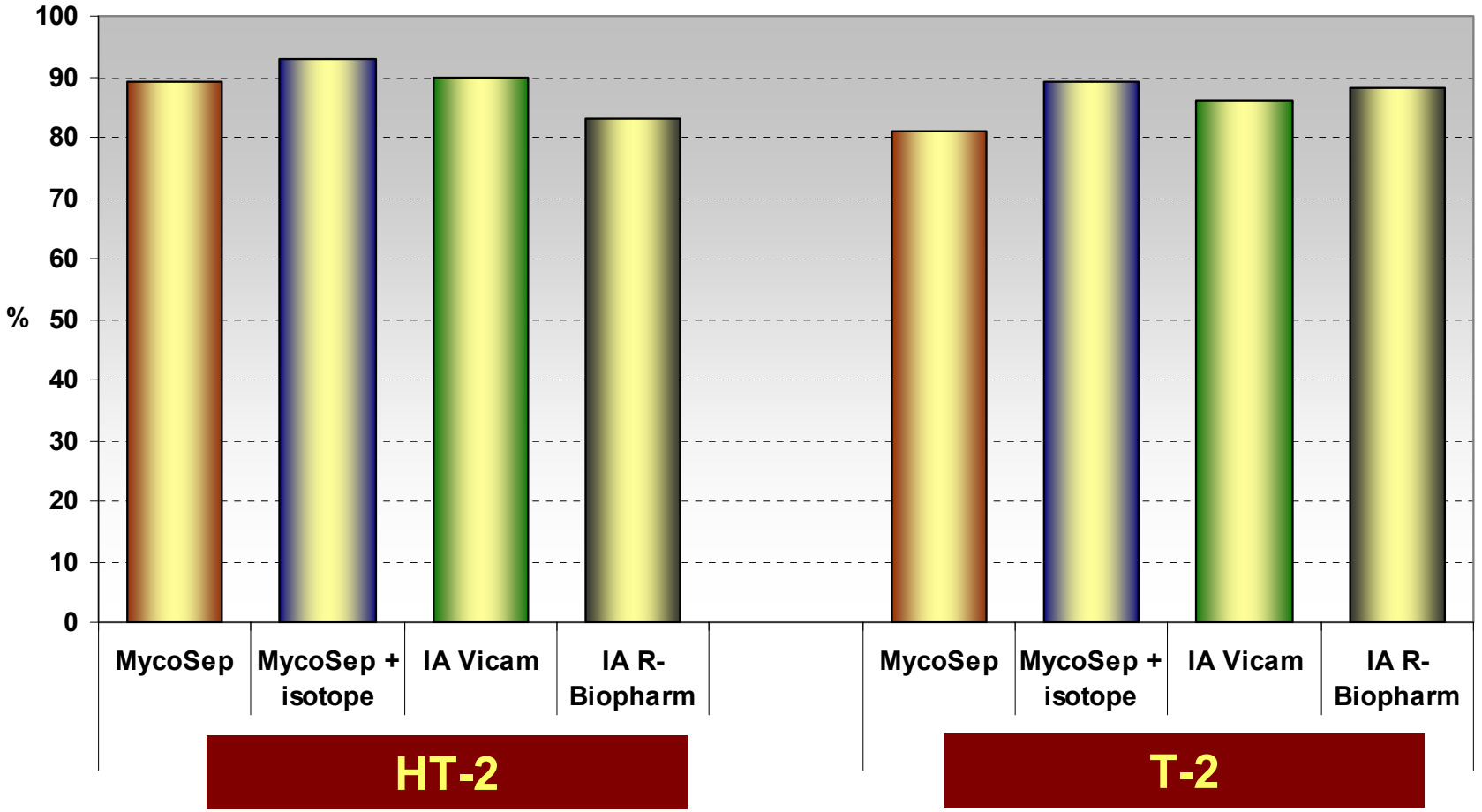
IA columns



r-biopharm

VICAM

Recovery for various clean-up steps of barley samples



Barley was artificially spiked on level 100 ng/g by both toxins

QUESTIONS TO BE INVESTIGATED / ANSWERED

- What is the correlation of T-2 and HT-2 toxin levels with the presence of other Fusarium-toxins, mainly DON?
- What are the sources of / causes for observed variation in occurrence of T-2 and HT-2?
- What is the fate of -2 and HT-2 toxins during cereals processing ?
- Proposals for mittigation strategies?
- What is the quality of data generated on T-2 and HT-2 levels?